

Collecting the Water Sample



Materials and Tools

4-L bucket with a strong rope attached securely to the handle
Paper towels
500 mL-polyethylene sample bottles
GLOBE Science Notebooks, pens, Data Work Sheets
Latex gloves (recommended)

If students can SAFELY reach the water body (within arms' reach), water temperature, pH, dissolved oxygen, and electrical conductivity measurements can be taken *in situ* directly at the water's edge. However, the measurements of alkalinity, salinity, and nitrate require a sample to be taken with a bucket. The water samples should be tested immediately after they are obtained. If unavoidable, samples may be bottled and tested for pH, alkalinity and salinity or electrical conductivity after returning to the classroom. The oxygen in the water must be stabilized by doing the initial steps of the dissolved oxygen protocol before the sample can be transported. Use the following techniques to obtain water samples for immediate testing and to bottle samples for testing in the classroom.

A sample of surface water can be used with the turbidity tube. The Secchi disk measurement is only appropriate for deeper water and measurements are generally taken from a bridge or pier, away from the water's edge.

Sampling Technique

1. Holding onto the rope, lower the bucket into the water and allow it to fill partially with water. If the bucket sits on its end, its lip is not lowering enough to allow water into it; jostle it with the rope. Once some water enters the bucket, retrieve the bucket and swirl the water around to clean out the bucket. Discard this water and repeat the procedure once more. Do not use distilled water to rinse the bucket as this will change the sampling results. Likewise never let the sampling bucket be

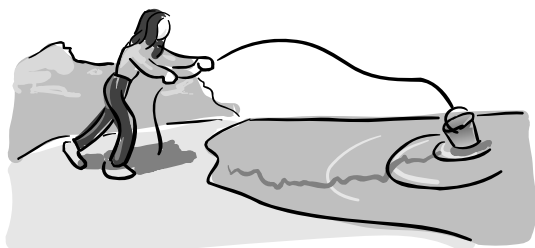
used for cleaning or other purposes since this will also affect the sampling results.

If your sampling site is a stream, throw the bucket out to a well-mixed area, a little distance from the shore. Ideally, the water should be flowing at least slightly. If you are sampling from a fast-moving stream, grip the bucket rope tightly so the force of the water's flow does not take your bucket with it.

If you are sampling from a lake, bay, or the ocean, take samples from the shore and throw the bucket out as far as possible to take your sample. You should always take a sample from the top surface water. Do not let the bucket fill up and



Rinsing the water bucket.



Casting the bucket.

sink. Also be careful not to stir up bottom sediment.

2. To obtain a sample, allow the bucket to fill to about 2/3 to 3/4 full. Then hoist the bucket out of the water.

Bottling Technique

While the preferred procedure is to do all testing at the Hydrology Study Site, measurements of pH, alkalinity, nitrate and electrical conductivity or salinity can be done in the classroom. The dissolved oxygen protocol can be completed in the classroom after the dissolved oxygen has been stabilized in the field.

Use the following procedure to bottle sample water and transport it to the classroom for all but temperature, dissolved oxygen and transparency measurements.

1. Label a 500-mL polyethylene bottle with your school's name, the teacher's name, the site name, the date and time of collection.
2. Rinse the bottle and cap with sample water.
3. Fill the bottle with sample water until the water forms a dome shape at the top of the bottle so that, when the cap is put on, no air is trapped inside.
4. Seal the cap of the bottle with masking tape.

Note: Tape serves as a label, and an indicator of whether the bottle has been opened. Tape should NOT be in contact with the water sample itself.

5. Store these samples in a refrigerator at about 4° C until they can be tested (within 2 hours for pH and nitrate and within 24 hours for alkalinity and salinity or electrical conductivity).

6. Once the seal is broken, do the pH test first, then the tests for salinity or electrical conductivity, alkalinity, and nitrate. Ideally, once opened, all the measurements should be performed during the same lab session.

Safety



- Consult the Material Science Data Sheets (MSDS) that come with kits and buffers. Also consult your local school district's safety procedure guidelines.
- In any cases where using kits with chemicals, latex gloves and safety goggles are recommended.